CLIMATE NARRATIVE for December 2018

WEST COAST OF UNITED STATES AND NORTH PACIFIC
At the end of December 2018, positive SST anomaly (≤2°C) was found within 150 kilometer (km) the West Coast between Monterey and Cape Mendocino, otherwise coastal anomalies were less strongly positive. Negative anomalies (>-1.5) were seen in the eastern NP at 15°-20°N, off Central America and at 33°- 48°N. In the western NP negative anomalies occurred north of 40°N. Positive SST anomalies were most developed (<2.0°C) in the western NP between 20°-50° and across the eastern equatorial ocean.
http://www.ospo.noaa.gov/Products/ocean/sst/anomaly/
https://coastwatch.pfeg.noaa.gov/elnino/coastal_conditions.html
https://sharaku.eorc.jaxa.jp/cgi-bin/adeos2/seaice/seaice_v2.cgi?lang=e&mode=large

WATER TEMPERATURES AT WEST COAST SHORE STATIONS
At **La Jolla** (32.9°N), sub-tidal water temperature (STWT) varied between 17.9°C on the first and 15.7°C at month's end. La Jolla STWT was stable near 17°C during 10-20 December. Southern **Monterey Bay** (36.6°N), STWT was 16°C on the first, 14.2°C on the fifth, 15.7°C on 18 December and 13.7°C on 31 December. **Neah Bay**, (48.4°N) STWT was 10.5°C on the first, dropping to the month's minimum of 7.7°C on 7 December, then increasing to 9.7°C on 20 December; ending the month at 8.2°-8.7°C.
https://tidesandcurrents.noaa.gov/stations.html?type=Physical+Oceanography

EQUITORIAL AND SOUTH PACIFIC (late December)
El Niño-Southern Oscillation (ENSO) conditions remained low intensity with greatest SST anomalies east of 160°W. Since mid-December 2018, positive sea temperature anomalies have weakened across much of the equatorial Pacific. Upper 300 m heat content anomaly of the eastern equatorial Pacific decreased in December. In the central Pacific south of 30°S, positive SST anomalies (≤2.0°C) occurred in the east and west. Areas of negative SST anomaly (≥-2.0°C) occurred north of 20°S, along the coast of southern Chile, north of Australia, and south of 40°S.
http://www.ospo.noaa.gov/Products/ocean/sst/anomaly/
http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/ocean/weeklyenso_clim_81-10/wksl_anm.gif

The **NOAA OCEANIC EL NIñO INDEX (ONI)** (3-month running mean of SST anomalies in the Nino 3.4 region) was 0.7 for SON and 0.9 for OND, both El Niño positive values.
http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/lanina/enso_evolution-status-fcsts-web.pdf
The **NOAA / NCEI PACIFIC DECADAL OSCILLATION INDEX (PDO)** series calculated from ERSST.v4 data, has recently had ten consecutive negative or neutral PDO values, including -0.78, -0.14 and -0.29 for November through January 2019.
https://www.ncdc.noaa.gov/teleconnections/pdo/
The PACIFIC / NORTH AMERICAN Teleconnection Index (PNA), computed from atmospheric pressure over the Pacific Ocean and North America had consistently neutral

to positive values during August-December 2018. Daily values were consistently positive during December. Positive PNA values are associated with warm-phase ENSO events.
https://www.cpc.ncep.noaa.gov/products/precip/CWlink/pna/pna_index_ensm.shtml

During December 2018, the Bakun **ERD UPWELLING INDEX (UI)**, computed from monthly average sea level atmospheric pressure fields were weakly positive from 36°N southward and strongly negative from 45°N to 57°N. UI anomalies were generally small.
https://upwell.pfeg.noaa.gov/products/PFELData/upwell/monthly/table.1812

PRECIPITATION and RUNOFF (late December)
December rains were 65%-110% of monthly normal (8-24 inches) throughout western Washington and 70% to 90% (6-13 in) of monthly normal over much of western Oregon. In northern, central and southern California 3-10 in, 1-6 in and 1-4 in indicated 60%, 80% and 70-110%, respectively, of average rainfall. The **Fraser River**, measured at Hope (130 km upstream from Vancouver, B.C.), was flowing at about at about 33,000 cubic feet per second (cfs). https://wateroffice.ec.gc.ca The **Puyallup River at Puyallup**, Washington was flowing at 5,000 [3,300, approx. historical median as cfs in brackets]. The **Skagit River** was flowing at 17,500 [15,500 cfs] near Mount Vernon. The **Columbia River** at International Boundary was at 75,000 [70,000 cfs] and at The Dalles 120,000 [110,000 cfs]. The **Rogue River** in Oregon had discharge of 1,100 [1,300 cfs] at Grants Pass and 3,000 [4,000 cfs] at Agnees. In California, the **Trinity River** near Hoopa was 2,000 [3,900 cfs] and the **Klamath River** near Klamath was 8,000 [10,700 cfs]. **Sacramento River** transport was 10,200 [10,750 cfs] at Verona and 10,500 [19,000 cfs] at Freeport. **San Joaquin River** transport was 1,100 [2,500 cfs] at Vernalis.
https://waterdata.usgs.gov/ca/nwis/current/?type=flow
https://www.cnrfc.noaa.gov/awipsProducts/RNOWRKCLI.php=

NOTES (December 2018)

The **Multivariate ENSO Index (MEI)** is not currently being updated. Staff are exploring a new method for calculating the MEI using reanalysis data rather than observational data**.** https://www.esrl.noaa.gov/psd/enso/mei/

The California commercial **Dungeness crab (***Metacarcinus magister*) harvest season opened 15 November in the area from Sonoma County (38.3°N) to the Mexican border, but was closed in the north due to elevated domoic acid in northern crabs. Additional delay was because of crab maturity.
https://www.wildlife.ca.gov/Fishing/Ocean/Dungeness-Crab
https://www.wildlife.ca.gov/fishing/ocean/health-advisories

Because of the **extensive forest fires in central and southern California** during November 2018, runoff from the fire areas and fire smoke have added extensive solid materials to the rivers, lakes and ocean of California.
https://www.hakaimagazine.com/news/what-happens-to-fish-after-a-wildfire/

Edited versions of this report may be found,
https://coastwatch.pfeg.noaa.gov/elnino/coastal_conditions.html
The interpretations in this report, assembling climate information, are those of the author (jgn) and may not be official positions of any part of NOAA or the Federal Government or

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